REMARKS

The Office Action dated April 23, 2002 presents the examination of claims 1-7. Claims 1-6 are amended. Claims 8-14 are added. Support for claims 8-14 is found in the specification. Specifically, support for claims 8-10 is found on page 3, lines 20-24, and page 8, line 13 to page 11. Support for claims 11-14 is found on page 5, lines 20-21, and page 12, line 14 to page 13, line 4 of the specification, and in original claim 2. No new matter is inserted into the application.

Request for Initialed PTO-1449 Form

The Examiner is requested to issue an initialed PTO-1449 form confirming that the Information Disclosure Statement filed May 30, 2001 has been fully considered pursuant to MPEP § 609. A second copy of the PTO-1449 form is attached hereto for the Examiner's convenience.

Rejection under 35 U.S.C. § 112, Second Paragraph

Claims 1-7 stand rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite. Applicants respectfully traverse. Reconsideration of the claims and withdrawal of the instant rejection are respectfully requested.

Claim 1

The Examiner asserts that the phrase "based on the function of *Agrobacterium*" is unclear. In response to the Examiner's remarks, Applicants amend the phrase to "for *Agrobacterium* based plant transformation." This phrase means that that the vir proteins of *Agrobacterium* recognize the border regions of the vector carrying the T-DNA region so that the vector may be introduced into the plant.

The Examiner asserts that the recitation of "the left border sequence" is unclear. In response to the Examiner's remarks, Applicants amend the phrase to "T-DNA left border region."

The Examiner rejects the recitation of "such as" in claim 1. In response to the Examiner's remarks, Applicants delete this phrase from claim 1.

The Examiner also rejects the recitation of "reduce the possibility of integration" in claim 1. In response to the Examiner's remarks, Applicants delete this phrase from claim 1, and replace therefor "prevents integration."

Claim 2

The Examiner asserts that the recitation of "the right border sequence" is unclear. In response to the Examiner's remarks, Applicants amend the phrase to "T-DNA right border region."

The Examiner also rejects the recitation of "that can be recognized by the vir proteins" and asserts that it is unclear whether both the left and right border sequences are recognized by the vir proteins. In response to the Examiner's remarks, Applicants amend the claim to clarify that the T-DNA right border region is recognized by the *vir* proteins of *Agrobacterium* and a modified T-DNA left border region is recognized by the vir proteins of *Agrobacterium*.

Claim 3

The Examiner asserts that the recitation of "modification of the left border" is unclear. In response to the Examiner's remarks, Applicants amend the claim to clarify that the modified T-DNA left border region comprises a plurality of T-DNA left border sequences. Applicants make note that the modified left border region which is recognized by the vir proteins, encompasses not only the natural left border sequence that is a well-known 25-nucleotide length sequence but also a plurality of natural left border sequences.

Claim 4

The Examiner states that "the T-DNA sequence" lacks antecedent basis. Applicants amend the phrase to "the T-DNA region" which has antecedent basis in claim 2.

The Examiner states that "a marker gene" implies a naturally occurring DNA sequence. In response to the Examiner's remarks, Applicants amend the phrase to simply "a marker." Applicants note that it is well known in the art that the marker may be a chromosomal marker, or a polynucleotide sequence encoding a marker protein, as suggested by the Examiner.

The Examiner states that "the transformant" lacks antecedent basis. Applicants amend the phrase to "a plant transformed with the vector" which has antecedent basis within the claim.

Claim 5

The Examiner asserts that the recitation of "including bacteria" is unclear. In response to the Examiner's remarks, Applicants delete said phrase from claim 5.

Claim 6

The Examiner points out that "Agrobacterium" is misspelled. This is corrected in the amended claim 6.

The Examiner asserts that claim 6 is an incomplete method claim. In response to the Examiner's remarks, Applicants amend the claim so that a transformed plant is produced by the final step of the method.

Applicants respectfully submit that the above remarks and/or amendments address and overcome the rejection of the claims under 35 U.S.C. § 112, second paragraph. Withdrawal thereof is therefore respectfully requested.

Rejection under 35 U.S.C. § 112, First Paragraph

Claims 1-7 are rejected under 35 U.S.C. § 112, first paragraph, for allegedly not being enabled by the specification. Applicants respectfully traverse. Reconsideration of the claims and withdrawal of the instant rejection are respectfully requested.

Specifically, the Examiner states that the specification, while being enabling for an *Agrobacterium* vector wherein the left border sequence has been modified to include one or two additional repeats of the T-DNA left border sequence, does not enable *all modifications* of the left border sequence for *any bacteria* other than *Agrobacterium*.

Claim 1, as amended, recites a vector comprising a modified T-DNA left border region. As noted in the specification on page 15,

line 10 to page 16, line 15, the fundamental concept of the present invention lies in the modification of the left border region of the plant transformation vector so that that border sequences are recognized by vir proteins and the T-DNA sequence is efficiently integrated into the plant chromosome.

Such a modification may be (1) the deletion, substitution, or addition of one or more nucleotides in the existing left border region which would make the vir proteins recognize the region more efficiently, (2) the deletion, substitution, or addition of one or more bases in any sequence near the existing left border region which would make the vir proteins recognize the region more efficiently, (3) the plurality of any sequences that are recognized by vir proteins, and (4) a combination of any of the above (1)-(3).

The specification includes examples of the modified left border region. For example, on page 5, the left border region is modified to include one or two additional repeats of the T-DNA left border sequence. On pages 12-13, examples of vectors having three and four left border sequences are disclosed.

For these reasons, Applicants respectfully submit that the quantity of experimentation needed to make and use the present invention is not undue. The Examiner is reminded that the fact that the experimentation is complex or considerable does not make

the performance of that experimentation undue, if one of ordinary skill in the art routinely engages in such experimentation. (MPEP § 2164.05).

In the instant case, the examples provided in the specification and the general knowledge in the art only requires experimentation routine to the artisans skilled in this specialized art field. Based on the disclosure of the specification and based on the state of the art, one skilled in the art would know how to modify the T-DNA left border regions.

Finally, with respect to the Examiner's allegation that the present invention is enabling for *Agrobacterium* but not other bacteria, Applicants respectfully assert that the amended claims clearly set forth that the transformation system of the present invention occurs in *Agrobacterium*.

Applicants respectfully submit that the claims, as amended, fully meet the requirements of 35 U.S.C. § 112, first paragraph. Withdrawal of the instant rejection is requested.

Rejection under 35 U.S.C. § 102

Claims 1-7 are rejected under 35 U.S.C. § 102(b), for allegedly being anticipated by Becker et al. (Plant Molecular Biology 20:1195-1197 (1992)). Applicants respectfully traverse. Reconsideration of

the claims and withdrawal of the instant rejection are respectfully requested.

Becker et al. merely teaches new plant binary vectors with selectable markers located proximal to the left T-DNA border. Accordingly, Becker et al. does not disclose the modification of the left border region *per se*. Therefore, Becker et al. fails to disclose or suggest each and every limitation of the claims.

Thus, the present invention is therefore distinguishable from Becker et al. Withdrawal of the instant rejection is respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the

Examiner is invited to contact Kristi L. Rupert, Ph.D. (Reg. No. 45,702) at 703-205-8000.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a three month extension of time for filing a reply in connection with the present application, and the required fee of $920.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made
PTO-1449 Form

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims have been amended as follows:

1. (Amended) A [plant transformation] vector [based on the function of *Agrobacterium*, wherein the left border sequence has been modified such as to reduce the possibility of the integration of any non-T-DNA segment into plant chromosomes] for *Agrobacterium* based plant transformation, comprising

a modified T-DNA left border region,

wherein said vector prevents integration of a non-T-DNA segment into a plant chromosome.

2. (Amended) A vector for *Agrobacterium* based plant transformation [vector] comprising:

a T-DNA right border [sequence and a left border sequence that can be] region that is recognized by the *vir* proteins of *Agrobacterium*[,];

a modified T-DNA left border region that is recognized by the *vir* proteins of *Agrobacterium*;

a T-DNA region located between these border [sequences] regions and into which a [gene] nucleotide sequence to be introduced into the plant can be inserted[,]; and

a replication origin that enables replication of said vector in bacteria,

wherein said [left border sequence has been modified such as to reduce the possibility of] vector prevents integration of any non-T-DNA segment into a plant [chromosomes] chromosome.

3. (Amended) The [plant transformation] vector according to claim 1 or 2, wherein the [modification of the] modified T-DNA left border [sequence] region comprises [more than one left border sequence] a plurality of T-DNA left border sequences.

4. (Twice Amended) The [plant transformation] vector according to claim [1] 2, wherein the T-DNA [sequence] region contains a marker [gene] that permits the selection of [the transformant] a plant transformed with the vector.

5. (Twice Amended) The [plant transformation] vector according to claim [1] 2, wherein the replication origin permits replication of the vector in [bacteria including bacteria for vector amplification] a vector amplification bacteria cell and an *Agrobacterium* host cell.

6. (Twice Amended) A method [of] for transforming [plants] a plant comprising the steps of:

[using an *Agrobacterium* host cell containing] introducing the vector according to [claim 1] any one of claims 1, 2, 4 or 5 into an *Agrobacterium* host cell; and

transforming a plant cell with the *Agrobacterium* host cell harboring the vector.

Claims 8-14 have been added.